G—IN THE VALLEY

FRANKLIN ARBUCKLE, R.C.A., O.S.A.

Conservation Authorities in Ontario

ROGRESS and ACHIEVEMENTS

SUNDAY MORNING—IN THE VALLEY

FRANKLIN ARBUCKLE, R.C.A., O.S.A.

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PROGRESS and ACHIEVEMENTS

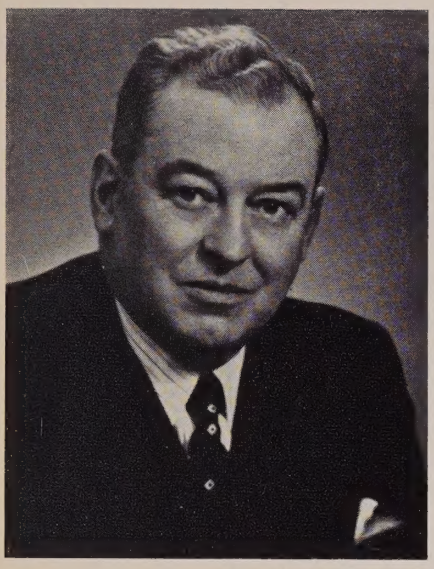
McKAGUE

The conservation of our resources, including the wise use of water, land, forests, minerals and wildlife wherever they occur in this Province is of the greatest importance to our people.

It is now fourteen years since the first Conservation Authority was established. The people of the river valleys throughout the Province have responded in a very fine way and the idea of conservation has come to be foremost in the thinking of our citizens.

With confidence I am sure we all feel that this aggressive interest will be maintained and indeed extended.

Prime Minister of Ontario



ASHLEY & CRIPPEN

The progress made by the Conservation Authorities in building up the renewable natural resources under their jurisdiction, protecting the ones that remain, restoring those that have vanished, and acquiring suitable areas for parks, is a matter of great satisfaction to me.

This brochure illustrates some of the achievements of the river valley Authorities during the last fourteen years and I commend it for thoughtful study to all who are concerned about resources for tomorrow.

Minister

CONSERVATION AUTHORITIES IN ONTARIO

Ausable River Conservation Authority
H. G. Hooke, *Secretary-Treasurer*, Exeter

Big Creek Region Conservation Authority
W. D. Adlam, *Secretary-Treasurer*, 19 Kent Street South, Simcoe

Catfish Creek Conservation Authority
D. M. Halpenny, *Secretary-Treasurer*, Aylmer

Central Lake Ontario Conservation Authority
Mrs. J. Browning, *Secretary-Treasurer*,
897 Ritson Road North, R.R. 1, Oshawa

Credit Valley Conservation Authority
W. Elmer Wright, *Secretary-Treasurer*,
1216 Mississauga Road, Port Credit

Crowe Valley Conservation Authority
L. H. Cooke, *Secretary-Treasurer*, Havelock

Ganaraska River Conservation Authority
Mrs. Clarke Wood, *Secretary-Treasurer*,
Molson Street, Port Hope

Grand Valley Conservation Authority
H. C. Elliott, *Secretary-Treasurer*, 27 Dickson Street, Galt

Grand River Conservation Commission
N. R. Drimmie, *Secretary*, Elora

Holland Valley Conservation Authority
Wesley Brooks, *Secretary-Treasurer*,
171 Main Street, Box 204, Newmarket

Junction Creek Conservation Authority
J. D. Hobbs, *Secretary-Treasurer*, 1373 Gemmell Street, Sudbury

Middle Maitland Valley Conservation Authority
Cyril Bamford, *Secretary-Treasurer*, Listowel

Metropolitan Toronto and Region Conservation Authority
F. L. Lunn, *Secretary-Treasurer*, Box 720, Woodbridge

Moira River Conservation Authority
Michael Chubb, *Secretary-Treasurer*,
Municipal Building, Box 13, Cannifton

Napanee Valley Conservation Authority
Claude H. Knight, *Secretary-Treasurer*, Box 367, Napanee

Neebing Valley Conservation Authority
D. M. Martin, *Secretary*, City Hall, Fort William

Niagara Peninsula Conservation Authority
James Doyle, *Secretary-Treasurer*, 197 Russell Avenue, St. Catharines

North Grey Region Conservation Authority
M. D. Kirk, *Secretary-Treasurer*, Grey County Building, Owen Sound

Nottawasaga Valley Conservation Authority
Bruce Parton, *Secretary-Treasurer*, Stayner

Otonabee Region Conservation Authority
Mrs. A. C. Hoyle, *Secretary-Treasurer*,
474 Cordach Crescent, Peterborough

Otter Creek Conservation Authority
W. D. Adlam, *Secretary-Treasurer*, 19 Kent Street South, Simcoe

Sauble Valley Conservation Authority
M. D. Kirk, *Secretary-Treasurer*, Grey County Building, Owen Sound

Saugeen Valley Conservation Authority
R. V. Brittain, *Secretary-Treasurer*, Walkerton

Sixteen-Mile Creek Conservation Authority
L. R. McKersie, *Secretary-Treasurer*, Box 266, Milton

South Nation River Conservation Authority
G. G. Landry, *Secretary-Treasurer*, 2267 Courtice Avenue, Ottawa

Spencer Creek Conservation Authority
T. M. Thomson, *Secretary-Treasurer*, 3 Mayfair Court, Dundas

*Sydenham Valley Conservation Authority

Upper Thames River Conservation Authority
L. N. Johnson, *Secretary-Treasurer*, Fanshawe Dam, R.R. 5, London

*Lower Thames Valley Conservation Authority

Twelve-Mile Creek Conservation Authority
H. A. Speers, *Secretary-Treasurer*, R.R. 2, Milton

Whitson Valley Conservation Authority
J. C. G. Demers, *Secretary-Treasurer*, Box 388, Chelmsford

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* Order-in-Council not yet passed.

INTRODUCTION

CONSERVATION has long been a subject of concern to the people of Ontario. This concern had to do originally with the protection of forests because of their importance as a source of revenue, but allied with this were the problems of wildlife management and the protection of source areas of rivers and streams. In Southern Ontario interest in conservation was indicated first by reforestation and woodlot management, but this has broadened out to include flood control and water conservation, improved land use and recreation areas.

While the progress in these activities has been steady since their inception, most of the programmes were initiated by government departments. In recent years, however, there has been a growing conception of personal obligation, especially where land use problems, farm ponds and small reforestation projects are concerned. On the other hand, control of flooding and increased summer flow, large reforestation projects and parks have come to be considered the responsibility of the community—the community, in this case, being the river valley.

With the advent of this new concept of personal and community responsibility in conservation, the Authorities movement was born, and the willingness of our people to undertake conservation in this way is indicated by the rapid progress made in establishing Authorities in the last fourteen years.

The Conservation Branch of the Ontario Department of Commerce and Development* was established in 1944 and was charged with organizing conservation work in Southern Ontario on the basis of drainage basins, with all the municipalities contained therein as equal partners.

From the terms of the Act which established this Department and the scope of work envisaged for the Conservation Branch as embodied in The Conservation Authorities Act, it is evident that the field of conservation assigned to it is confined very definitely to working with municipalities after they decide to carry out a conservation programme within their watersheds. The Branch is therefore primarily a planning and co-ordinating arm of the Ontario Government. This should be clearly understood, because there are four other Departments of the Ontario Government engaged in conservation activities which deal with specific phases of our natural resources.

The large forest empire in Northern Ontario with its problems of timber management, fire protection, reforestation, forest research, fish and wildlife, recreation and allied problems is administered by the Department of

*The Department of Planning and Development was established in 1944 and was renamed the Department of Commerce and Development in the fall of 1960.

Lands and Forests. Matters dealing with soil management and drainage, farm planning, crop improvement and a multitude of other problems which are the concern of the farmers of this province are administered by the Department of Agriculture. The building of dams in the hinterland of the north to maintain lake levels and regulate summer flow is the responsibility of the Department of Public Works. And the most recently established group, the Ontario Water Resources Commission of the Department of Municipal Affairs, has wide powers in the study and control of water problems and is concerned at the present time very actively with sewage disposal problems and municipal water supplies.

Considering the scope of conservation covered by these four Departments, one may reasonably wonder why the Government of Ontario as recently as sixteen years ago in its wisdom decided to establish still another Branch of a department to plan and co-ordinate conservation schemes. The answer is that this was an entirely new approach in conservation activities, directed to assist the municipalities primarily in Southern Ontario.

THE CONSERVATION AUTHORITIES ACT

The Conservation Authorities Act was passed by the Legislature in the spring of 1946. It requires that all municipalities in a watershed—cities, towns, villages and townships (not counties)—be included in the body corporate.

The first step in establishing a Conservation Authority is undertaken by all the municipalities wholly or partly within a watershed. Two such municipalities must first by resolution petition the Minister of Commerce and Development to call a meeting for the purpose of ascertaining whether or not it is desirable that an Authority should be established. Two-thirds of the number of representatives which the municipalities are entitled to appoint (on a population basis) must be present to make the meeting legal. If two-thirds of those present vote in favour, a resolution is forwarded to the Minister requesting that an Authority be established. The Authority is then made legal by an Order-in-Council and under the Act becomes a body corporate with members from all the municipalities in the watershed, including those, if any, which voted against its establishment.

Thus from the above it will be seen that the establishing of a Conservation Authority is a simple legal matter. At the preliminary meeting the presiding officer is a senior civil servant who, together with a secretary chosen at the meeting, forwards a report with the resolution to the Minister of the Crown. In some cases small adjustments have been made in the area under consideration before the Order-in-Council is presented for approval, but since the inception of the work not one request for establishing an Authority has been refused.

The number of Authorities is 30. The area covered is 19,535 square miles, the number of municipalities 438 and the total membership 617.

It is not necessary to name all the Authorities here, as a complete list with secretaries will be found elsewhere in this publication, but it should be pointed out that they vary greatly in size, from the smallest with an area of 86 square miles and 8 members to the largest with 2,614 square miles and 78 members, the length of the smaller one being 20 miles and the larger 118 miles.

To this group of Authorities is added the Grand River Conservation Commission, which was established by special Act in 1938 and has as members representatives from eight urban municipalities on the Grand River. The chief concern of the Commission has been flood control, and since the Department of Commerce and Development was formed the governmental supervision and financing with respect to Federal and Provincial grants for two dams built by the Commission, namely Luther Marsh and Conestogo, have come under the administration of the Minister of Commerce and Development.

THE CONSERVATION REPORT

While most of the early Authorities were brought into being because of flooding, all were aware of the necessity of carrying out such supplementary measures as improved methods of land use, reforestation, proper woodlot management, prevention of pollution, investigation of underground water supplies, fish and wildlife studies and recreation. But the Authorities were not equipped to carry out the extensive investigations that would indicate where such work should be done. Consequently the Conservation Branch of the Department of Commerce and Development undertook to do this at no expense to the Authority, to appraise by means of surveys and reports the conservation needs of each watershed and to submit to the Authority a detailed report outlining the conservation measures that should be followed.

These reports are in the form of a working plan and are intended primarily for the Authority members. On large watersheds they run to 600 pages, 100 maps and charts, 150 illustrations, and contain as many as 75 recommendations. In addition to the full report, a summary of this in printed form is sometimes issued for general distribution.

The survey work which is written into the report is grouped under six general headings: History, Water, Land Use, Forestry, Wildlife and Recreation. The scope of the studies made in each of these subjects varies with the condition and needs of the area under investigation, with the result that in the completed report the findings recorded are directly related to the major problems to be solved.

[a] History

A certain amount of historical matter is used in each report as a starting point for the study. An attempt is made to get as true and localized a picture of past conditions as possible. Experience has shown that this historical approach is of great interest to the people of regions dealt with. It often serves to promote an interest in conservation among people who would otherwise remain indifferent.

[b] Water

Water problems begin in the office with a careful examination of all available data. Hydrometric and meteorological records kept over the years are checked and tabulated, and all available flood records are investigated and related to the gauge records of the river in question, after which the number, size and location of reservoirs required to control floods and regulate summer flow are determined. All small lakes, community ponds and old mill dams are mapped and examined.

[c] Land Use

The approach to this subject is on a watershed basis and the relations between soil, agriculture, forestry and water are carefully considered. All existing data, of which there is a considerable amount, are heavily drawn upon in preparing the report, most important of which are the excellent soil surveys carried out over the last 24 years by the Soils Department of the Ontario Agricultural College in co-operation with the Experimental Farms Service, Canada, and the basic work in physiography by Chapman and Putnam of the Ontario Research Foundation.

[d] Forestry

The forestry report provides information regarding the condition and extent of the original forest, the sequence of wood-using industries, forest products and their yields, and conservation measures in progress on the watershed at the time of the survey, together with recommendations for future conservation measures.

[e] Wildlife

Wildlife surveys include general inventories of all species of wildlife, both game and non-game, and special emphasis is laid on vanishing or threatened species. Streams are classified as to their condition and suitability for particular species of fish.

[f] Recreation

Recreation surveys include estimates of the present and future population of the area served, descriptions of the present use of all recreation

facilities by local and outside residents, rating of all recreation facilities—publicly or privately owned—and recommendations for new recreation areas for both the urban and rural population of the watershed.

INITIATION OF A SCHEME

When the report is presented, the Authority must assume responsibility for initiating the schemes which it considers most urgent; it must also make approaches to the Government Departments or other bodies from which it hopes to get assistance, either financial or otherwise.

If, for example, a scheme has to do with land use, the Authority must seek assistance from the Ontario Department of Agriculture, which maintains Agricultural Representatives in all the counties of Ontario as well as a large extension service at the Agricultural College at Guelph, including the Soil Advisory Service. If the scheme involves a forestry or wildlife problem, then the Department of Lands and Forests, which is similarly organized, is asked for assistance. In the case of flood control the Authority must engage a consulting engineer to do the engineering and designing up to the point of calling for tenders and to carry the work through the construction stage. Similarly, where an Authority acquires large Conservation Areas which may include parks and recreation, it may be necessary to employ men specially trained in this work to design the park areas.

FINANCING

Three classes of financing are mentioned in The Conservation Authorities Act. The first is for capital expense such as dams, reservoirs, reforestation land and Conservation Areas including parks. The Authority's share of payment for these must be borne by the member municipalities which benefit from the scheme. The second is maintenance on capital costs and is paid entirely by the Authority in the same way. The third is called "Administration Costs", and includes all those activities which an Authority might be expected to engage in except capital and maintenance costs—such as salaries and travelling expenses, office rent and equipment, tree-planting machines, exhibits, visual equipment, printed matter, farm ponds, the investigation of reforestation lands and other small conservation projects.

Grants are made by the Ontario Government to all types of conservation schemes except maintenance. Grants are a matter of policy and may change from year to year. At the present time grants for flood control schemes costing less than $5 million, and for engineering, are 50 per cent; for large-scale reforestation, 50 per cent for land purchases and 100 per cent for management. For Conservation Areas in which parks are situated, the acquisition of flood plain lands and all items included in "Administration Costs", the grants are also 50 per cent.

For flood control schemes which cost $5 million or more, the Government of Canada, under The Canada Water Conservation Assistance Act, may contribute on the basis of 37½ per cent Canada, 37½ per cent Ontario and 25 per cent Authority. Such grants, however, can only be obtained on the recommendation of the Minister of Northern Affairs and National Resources.

ADVISORY BOARDS

While all important decisions must be made by the full Authority and while in the case of large Authorities an Executive carries out the routine work, in most cases the most active unit is the Advisory Board. Under the Act provision is made for appointing advisory boards (committees) for any subject which is considered necessary by the Authority. Such boards deal with the preliminary work, at least, in the following subjects: flood control, little dams, land use, farm ponds, reforestation, wildlife, conservation areas and parks, public relations, and historical properties. As the membership of these boards is not limited to the Authority, it provides a splendid opportunity for assistance from groups of all kinds in the area which are interested in conservation; and while the final decisions must be made by the accredited members appointed by the municipalities, nevertheless through the operation of advisory boards the work of conservation can become the personal concern of each individual living in the valley.

From the foregoing it will be seen that the Conservation Authorities movement in Ontario is still a comparatively recent programme. Much has been done in the fourteen years since the Act was passed, but a great deal more is necessary.

The Authorities which have become most active are those in which, prior to their establishment, there was a healthy interest in conservation among the civic leaders, the press and the people in general. This same interest, spurred on by the fact that they now have power to plan and build in their own community, has been carried over to the Authority in action.

Rapid progress has also been made when the Government of Ontario, at the request of the Authority, has appointed a Field Officer to direct and co-ordinate its work. It is difficult to make progress in a large Authority if the members, who are engaged in making a living, must find time to plan and carry out even to a limited degree the broad programme of conservation which the whole watershed demands. These fieldmen are employees of the Conservation Branch, whose salaries are paid by the Ontario Government and expenses paid by the Authority. Thirteen fieldmen are now employed in this work, distributed on the basis of the size of the Authorities they serve.

Finally, the Authorities which have gone farthest in this programme are those which have realized the true meaning of river valley development, namely that it is a co-operative effort of all the people living in a valley. By the very nature of the problems, some areas must be dealt with first and others must wait their turn, but the valley must be considered as a unit. This is perhaps the most difficult concept to teach our people: to compel them to turn their conservation thinking not inward but outward; not to dwell on what the Conservation Authority can do for me, a private individual, but rather, what will conservation, with its multiplicity of good things, do for all the people living in the valley.

—A. H. Richardson

ACKNOWLEDGEMENTS

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MIDSUMMER ON THE ROUGE

F. H. BRIGDEN, R.C.A., O.S.A

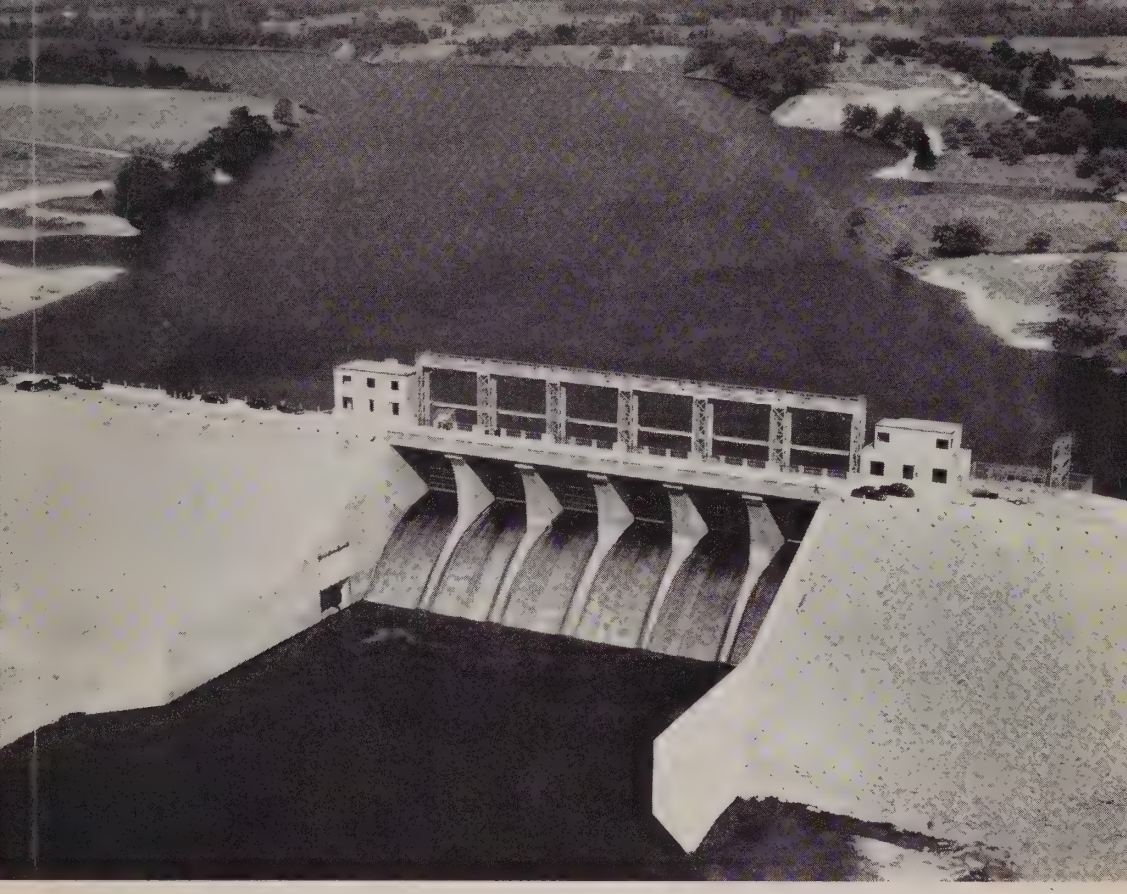
WATER: *flood control dams and reservoirs, flood channels, summer flow reservoirs, restoring lake levels, wetland reservoirs, repair of dams, silt removal from ponds, river channel improvement, farm ponds, irrigation, water spreading, pump drainage and stream gauges*

FLOODING has always been a major threat to the people living in the Thames Valley. Records dating back to 1791 show that 123 floods have been experienced in this period with the three worst floods occurring in the past 23 years. The greatest flood on record occurred in April 1937 due to heavy prolonged rainfall on ground already saturated by previous rains and melting snow. Rain continued over a period of five days with nearly four inches falling in the 48-hour period immediately preceding the flood.

At the city of London, where the North and South Branches of the Thames join, the river rose approximately 20 feet with an estimated peak flow of about 55,000 cubic feet per second. The dyke system, constructed over the years following previous floods, was overtopped and more than 500 acres of residential area in the city were inundated. In all about 1,100 buildings were affected and close to 5,000 people were forced to leave their homes.

All sections of the valley were affected to some degree and the total loss throughout the watershed was estimated at approximately $5,000,000. The damage in London alone amounted to close to $2,000,000.

The picture above shows a part of the city of London during the flood of the Thames River, April 1937.



One of the first projects undertaken by the Upper Thames River Conservation Authority after its establishment in September 1947 was the construction of the Fanshawe Dam and Reservoir, illustrated above, and completed in 1953 at a cost of nearly $5,000,000. Located on the North Branch above London the dam is an earth fill and concrete structure 77 feet high above the bed of the river and 2,050 feet in length.

Designed primarily for flood control this reservoir does not provide any increased summer flow. The permanent recreational lake contains 10,000 acre-feet of water, reserving more than 28,000 acre-feet of storage space at all times for flood control. The permanent lake extends back from the dam for a distance of 4½ miles, has a surface area of 650 acres and an average width of ¼ mile. Over 10 miles of shoreline and 1,600 acres of fringe lands are available to the public for recreation. The total length of the reservoir when full is 7½ miles.

While the Fanshawe Dam and Reservoir has successfully prevented flooding in the city of London on three occasions, this one unit is not sufficient to give the desired protection. A widespread system of dams and reservoirs, together with some local channel improvements, is required to extend flood protection to other municipalities and to protect the area from even greater floods which might occur in the future.

THE quiet break-up of the ice on the Grand River on Sunday, March 31, 1912 led to the belief that there would be no flood that year. However, with continued warm weather the melting snow had raised the river to near flood height from the headwaters to the town of Dunnville near the mouth at Lake Erie. All would probably have passed well except that heavy rainfall occurred on Saturday, April 6, and the river rose four feet or more above the highest level known up to that time.

The above photograph taken in Galt at the height of this flood illustrates the condition which existed throughout the valley. The flood began on the Grand above Belwood and raced downstream destroying bridges and threatening dams. Houses at Bridgeport, Preston, Galt, Paris, Brantford and other places were flooded to depths of three and four feet.

The 1912 flood is important as it marked the beginning of a serious study of flow conditions on the Grand and a comprehensive flood control plan for the whole watershed. Such a plan has now been prepared and is gradually being implemented by the Grand River Conservation Commission.

The Conestogo Dam and Reservoir, located on the Conestogo River near Glen Allan, is the third flood control and water conservation project undertaken by the Grand River Conservation Commission since its establishment in 1938. This Commission is composed of representatives from eight urban municipalities and was established by special act of the Legislature to deal with water problems on the Grand River. The two earlier projects undertaken by the Commission are; the Grand Valley (Shand) Dam and Reservoir on the Upper Grand River near Fergus completed in 1942 at a cost of $2,056,490 and the Luther Marsh Dam and Reservoir at the headwaters completed in 1953 at a cost of $233,806.

The Conestogo Dam and Reservoir was completed in 1957 at a cost of $4,800,000. The dam is an earth fill and concrete type structure. It is 80 feet high above the bed of the river, is 1,790 feet long and is crossed by a 24-foot roadway.

The reservoir is a V-shaped lake, each arm being six miles in length. It has a maximum depth at the dam of 74 feet, a surface area of 1,816 acres and a storage capacity of 45,060 acre-feet. Built primarily for flood control and increased summer flow the reservoir is progressively lowered throughout the summer months.

The dam was financed jointly by the Government of Canada (37½%), the Government of Ontario (37½%) and the benefiting municipalities (25%).

THE town of Brampton had been plagued with floods for over one hundred years. The above scene, taken in March 1948, showing muddy waters surging down Main Street, was almost an annual occurrence until recent years. The town of Brampton* began on the banks of the Etobicoke Creek but as it grew and land became more valuable the stream channel was covered over and finally confined to a large conduit with buildings erected over it.

The conduit was inadequate to carry the high spring and flash summer flows and, over the years, was further constricted by piers, steel beams, posts and other supports required to prevent it from collapsing. As a result, when the run-off exceeded the capacity of the conduit it overflowed and flooded the main business section to depths of three to four feet. Often flooding would occur with the break-up and the store fronts would be smashed by the heavy ice floes carried down by the water. Automobiles have been washed down the main street and submerged in the open channel below. Damages have amounted to as much as $500,000 in a single flood.

*The town of Brampton on the Etobicoke River is located in what was formerly the Etobicoke-Mimico Conservation Authority. This Authority together with the Humber, Don and R.D.H.P.—(Rouge, Duffin, Highland and Petticoat Creeks) now form the Metropolitan Toronto and Region Conservation Authority. This Authority includes 23 member municipalities of which the Municipality of Metropolitan Toronto is the largest. It has an area of 950 square miles and includes parts of four counties namely, York, Peel, Simcoe and Ontario. This Authority will be referred to hereafter in this publication as the MTRCA.

The Etobicoke Creek Conservation Report prepared by the Department of Commerce and Development, Conservation Branch, and published in 1947, recommended a diversion to carry the flood waters around the low-lying central business section of the town of Brampton. This was not a new idea, having been suggested by the Town Engineer some 20 years earlier. However, it was a costly undertaking and the Town did not have the financial resources to carry it through alone.

With the financial assistance provided under the Conservation Authorities Act, the work was undertaken by the Etobicoke-Mimico Conservation Authority (now part of the MTRCA) with assistance from the Government of Ontario. Completed in 1952, the flood channel is shown in action the following spring when flood waters were safely discharged around the former trouble area.

The over-all length of the new channel is 3,100 feet. It required the construction of three road bridges, one railway bridge, a sewage pumping station and the purchase and removal of several houses. The total cost of the project was approximately $1,000,000.

An adequate supply of good water is essential to the well-being, development and growth of any area and to ensure an adequate supply for the people in the valley, particularly the town of Napanee, the Napanee Valley Conservation Authority constructed the Second Depot Lake Dam in the upper part of the watershed. This is one of a series proposed for the area and was completed in 1957 at a cost of $193,420.

The dam, indicated by the arrow on the picture above, is located in the narrow rocky gorge at the outlet of the lake and consists of a concrete control section with an earth embankment. It is 25 feet high above the river bed and 185 feet long.

The reservoir at maximum level has a surface area of 472 acres of which only about 215 acres are newly flooded land. With 21 feet of storage the reservoir has a capacity of 7,414 acre-feet which, after losses, is sufficient to provide 33 cubic feet per second for a period of three months. This is a substantial increase when it is noted that the natural flow, before the dam was built, sometimes fell as low as 1 or 2 c.f.s.

The Second Depot Lake Dam, with a drainage area of 49.2 square miles or about 15 per cent of the total watershed area, is primarily a summer flow reservoir and provides only a small measure of flood relief in the lower part of the valley. With proper regulation, however, it can be used effectively to prevent flooding and damage to roads and bridges in the area immediately below the dam.

THROUGHOUT the Province there are numerous lakes which could be improved by means of small control structures placed at their outlets to regulate the water levels. Proper regulation would prevent high levels in the spring which damage installations and property around the shoreline and, at the same time, maintain the lake at a suitable level throughout the drier summer months. By lowering the lakes in the fall, storage space is provided for flood waters and the lakes could serve a useful purpose in this respect.

For the past two years the Sauble Valley Conservation Authority has built a small temporary dam at the outlet of Boat Lake to study the effect of higher water levels on the surrounding properties and to determine the optimum regulated level.

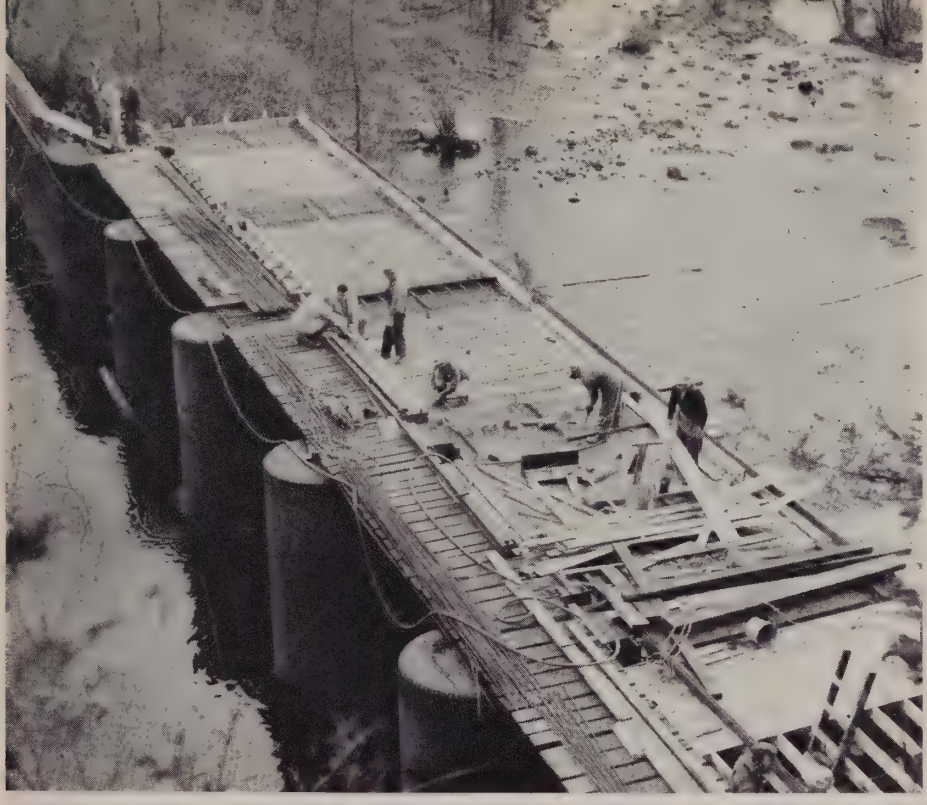
The temporary dam on Boat Lake indicates that these lakes can be improved and even restored at little cost. As a result of the Boat Lake study the Authority is now proceeding with the construction of a permanent dam on the Rankin River just below the outlet of the lake to restore its level and to increase the water levels in Isaac and Sky Lakes which drain into Boat Lake.

Most swamps or marshes represent a stage between lakes or ponds and dry land. In some cases, swamp land becomes valuable agricultural land if properly drained, but often the land is not suitable for agriculture and the drainage ditches create problems by increasing the spring run-off and reducing the water available in the area during periods of drought.

Such was the case at Luther Marsh in the Upper Grand Watershed. Over the years large sums of money were spent constructing drainage ditches and clearing the land for agriculture. This was not successful and much of the land was abandoned.

The Grand River Conservation Commission recognized the potential of this area for water storage purposes, acquired the land and constructed a low dam across the outlet. Completed in 1953 at a cost of $233,985 this scheme proved to be the most economical of the three reservoirs built by the Commission up to the present.

The Luther Marsh has an over-all area of about 9,900 acres of which nearly 4,900 acres are flooded providing 10,000 acre-feet of water storage. This is now one of the best duck marshes in Ontario and provides an excellent habitat for other wildfowl and muskrats.



One of the main objectives of the Crowe Valley Conservation Authority is to organize a system for the control and regulation of all the dams on the river system. These dams are being operated as individual units without any over-all plan to co-ordinate the discharges from the lakes and thus are not being used to the best advantage.

The Marmora Dam on the Crowe River at Marmora, which is one of the key dams in the system, was in poor condition and in danger of collapsing. The Authority acquired the dam and undertook to repair it as the first step in their programme.

Started in the fall of 1959, the dam was completed early in 1960 at a cost of $28,000. The work was hampered by unusually high water for the time of year and the dewatering of the dam revealed more extensive damage than was anticipated.

The work included repairing the eroded concrete footings, constructing a new concrete deck 111 feet long by 17 feet wide over the main sluiceway section, refitting and replacing stop logs, resetting the hoisting equipment, and drilling and grouting the base of the dam and the stratified rock wall at the west end of the dam.

Other dams which have been restored in the same manner by other Authorities are Fairey Lake Dam on the Holland, Owen Sound Mill Dam on the North Grey Region, Sutton Mill Dam on the Big Creek Region and Wellesley Dam on the Grand Valley Authority.

This illustration, showing the removal of silt from the Wellesley Pond on the Nith River, a tributary of the Grand, clearly demonstrates the need for conservation work on a watershed to prevent soil erosion.

Built over 100 years ago, this pond provided water for the operation of a grist mill until a few years ago when it was abandoned due to lack of water. Much of the pond had a depth of less than one foot of water, had become overgrown with weeds, was stagnant and generally unsightly.

The area was taken over by the Grand Valley Conservation Authority in 1957 and the pond was restored by repairing the dam and removing the accumulation of silt and debris from the bottom of the pond. In all, about 50,000 cubic yards of material were taken out, much of which was trucked to local residents for their lawns and gardens.

The total cost of this work, including $11,000 for repairs to the dam, was $41,808. The pond is no longer used for milling but serves as a recreation centre and provides water for emergency fire protection for the village.

Similar conditions exist in most of the old mill ponds in Ontario. Maintaining a proper balance of forest cover and management of the water source areas and cultivated lands will greatly reduce this threat and lengthen the useful life of ponds.

LOCAL channel improvement measures are not truly water conservation since they do not conserve water but merely ensure that it will pass safely through a given area. Where suitable sites are available reservoirs provide the best means of control but these are expensive undertakings and, in some cases, channel improvements are resorted to as a matter of economy.

In order to relieve the flooding in the low-lying valuable agricultural lands along the river above Grand Bend, the Ausable River Conservation Authority dredged the channel for a distance of 2,213 feet to improve flow conditions and permit high spring flows to pass without overflowing.

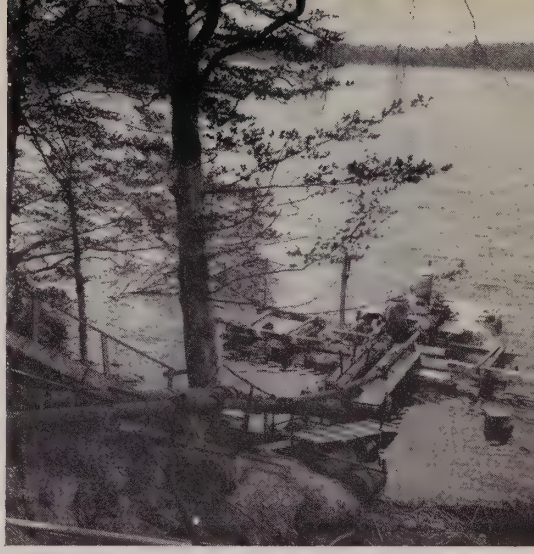
A channel with a minimum bottom width of 40 feet and approximate side slopes of 2 to 1 was dredged in the existing course. About 20,000 cubic yards of material were removed.

Other works of a similar nature carried out by Conservation Authorities include: Port Franks on the Ausable, Bridgeport on the Grand, Lower Don on MTRCA and Mitchell on the Thames. Also a large flood control channel over six miles long between Ingersoll and Beachville on the Thames was constructed by the Upper Thames Authority in 1950 at a cost of $1,002,000.

One of the most widespread activities of the Conservation Authorities is the building of farm ponds. Most Authorities provide technical and financial assistance and during the past 15 years more than 2,400 ponds have been constructed under their programmes.

Farm ponds, properly constructed and maintained, provide a permanent supply of water for livestock, irrigation, recreation, fishing, wildlife, and fire protection.

With more intensive farming, ponds are being used more and more for irrigation. This is particularly true on the Big Creek and Otter Creek Authorities, where the large tobacco-growing areas are located. The streams in this area were being seriously affected through pumping for irrigation purposes but, with a widespread system of farm ponds which retain excess water which otherwise would be wasted in the spring, this situation is improving.

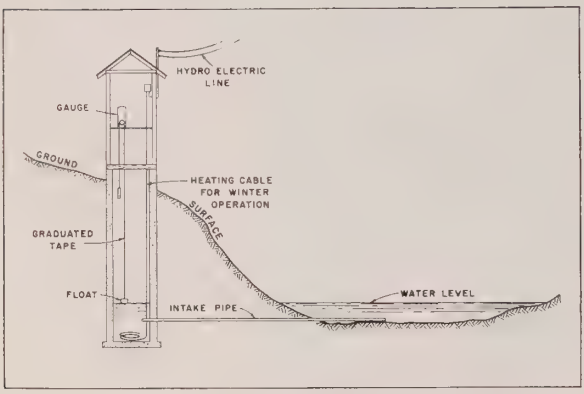


With the draining of low-lying wet areas and clearing of forest cover, the amount of water which formerly seeped into the ground has been reduced. In other areas concentrated heavy pumping by municipalities has exceeded the water-producing capacity of underground reservoirs with a resultant lowering of the water table.

To overcome this problem at London, Ontario, water is pumped from Fanshawe Reservoir, built by the Upper Thames Authority, over the shore of the lake for a distance of about 2,000 feet and discharged into a series of little ponds located over gravel beds which feed a group of wells supplying water to London. This is known as water spreading. Approximately 5,000,000 gallons per day are fed to the aquifer in this manner. It is estimated that it takes approximately six months for the water to reach the wells. A large degree of natural purification is also obtained in the process.

A similar scheme was carried out by the Catfish Creek Conservation Authority at Aylmer. The water table had dropped more than 20 feet due to excessive pumping and the supply was not adequate for their needs. A preliminary survey indicated that the water-holding stratum was of sufficient capacity but that natural recharge was hindered by an overlying impervious layer of clay soil. The clay layer was pierced and the surface run-off directed to it through recharge wells. In other places streams were diverted to sandy areas and in all about 300,000 gallons per day are now fed into the underground reservoir.

The hamlet of Goodwood, with a population of about 250 souls, lies in a depression of 380 acres in extent which has no drainage outlet. Nearly every spring it suffered a flood which lasted until the water seeped away through the soil. As the cost of digging a channel was prohibitive, the M.T.R.C.A. installed a permanent automatic pumping system which carries the flood waters up 25 feet over the ridge and discharges them into the headwaters of Duffin Creek.



MEASURING the flow of water in our rivers and streams is of vital importance for planning flood control schemes and other water conservation projects. The measuring of flow is done with stream gauges which, in the case of the manually operated gauges, are read once or twice daily by an observer. In the case of automatic gauges the readings are recorded on a chart automatically. When the Conservation Branch of the Department of Commerce and Development was established in 1944, very few gauges were being operated in Ontario. Since then 90 additional gauges have been installed, 28 of which are automatic gauges. The cost of the equipment including the installation and reading of these gauges is shared jointly by the Water Resources Branch, Department of Northern Affairs and National Resources, Canada, the Department of Commerce and Development, Ontario, and the Conservation Authority for which the gauge is installed.

The above picture shows an automatic gauge installation on the Etobicoke Creek in the MTRCA at Summerville on Highway No. 5. The diagram below illustrates the construction and operation of this type of gauge.

LAND USE: *soil erosion control, contour ploughing, land use improvement days, pasture farms, land-judging contests, conservation camp school and streambank protection*

EROSION reduces the value of many thousands of acres of farmland each season. Erosion may be spectacular in the form of gullies; more often, however, it goes on slowly and almost unnoticed on farm fields. In the early spring scene on the opposite page, the small rills washed out will be easily worked over, but much valuable topsoil has been carried away.

The picture above shows a farmer ploughing his fields on the contour, alternating strips of cultivated land with strips of sod. Contouring and strip cropping are means of reducing soil erosion and loss of water on sloping land. These, along with grass waterways, improved drainage and suitable rotations, help maintain and build up soil. Conservation Authorities co-operate with the Soil Advisory Service of the Ontario Agricultural College in promoting the interest of landowners in soil conservation and encourage them to carry out some of these measures on their own farms.

A NUMBER of Conservation Authorities have co-operated with local farm organizations in sponsoring Land Use Improvement Days. Gully control, fencerow removal, laying out grass waterways and contour strips, drainage and building farm ponds have been undertaken. These demonstrations have proven an effective means of creating public interest in conservation and good land use.

In the picture above part of the three hundred in attendance watch an eroded gully being brought under control by filling, widening and seeding it into a grass waterway. This was one of the activities at the Waterloo County Land Use Improvement Day sponsored by the Grand Valley Conservation Authority and the County Soil and Crop Improvement Association.

PICTURED above is the Saugeen Authority's Demonstration Pasture Farm in Grey County. This 200-acre property was bought as part of the Saugeen Authority Forest. A portion of the purchase was of better-quality land than that being reforested in the area. It was therefore decided to use this property as a demonstration of the possibilities of marginal land for improved pasture.

The Conservation Authority and the Department of Agriculture are co-operating in the project. The demonstration shows not only that good grass cover can be grown on this type of land, but that good grass crops are an excellent soil and water conservation measure.

The Upper Thames, Credit, Grand and MTRCA have established land use demonstrations as part of the development plans of several of their Conservation Areas. These have been successful in illustrating conservation measures to rural landowners. They have also been examples of good farming practices for the many urban people who visit the Conservation Areas.

LAND-judging competitions help farmers, both young and old, to better appreciate soil problems. The events combine instruction with competition. Participants examine four different types of soil, and judge them according to such qualities as drainage, slope, texture, stoniness and erosion. Their decisions are recorded on score cards which, along with verbal reasons for their choices, are the basis for the placing of the competitors.

The first land-judging competition in Ontario was held in Peel County in 1955. Since then, these competitions have become quite popular. Conservation Authorities have led in sponsoring them in many counties. They are organized co-operatively by the County Agricultural Representatives and local farm organizations. The Soils Department of the Ontario Agricultural College supplies technical assistance.

This year ten Conservation Authorities helped sponsor 15 of these very worthwhile events. The competition pictured on this page was held in Waterloo County in the Grand Valley Authority.

A PROJECT unique in conservation in Ontario—a conservation camp school, has been held annually for the past seven years by the MTRCA. For this event, a whole Grade 9 class from York Memorial Collegiate, Toronto, moves from the classroom to the Humber Watershed. There its members study conservation and resource management in the field.

The students live in camp at Bolton for three days each spring. These are spent under the instruction of the staff of the Authority. They visit local farms, woodlots, a sawmill, Conservation Areas and a rural public school.

Developed under the initiative and leadership of Miss Blanche Snell of the Collegiate staff, and with the support of the York Township Board of Education and the Conservation Authority, the conservation camp school has been an outstanding success. It has provided an opportunity for a group with urban background to see at first hand in the field what they have studied previously in the classroom. The project has aroused the interest of other schools and educational officials.

In the scene above, the camp school class is shown at "Cedarmain Farm" near Bolton owned by Mr. S. M. Blair. They are listening to a talk on beef cattle farming.

This experimental stream bank protection project was built by the Grand Valley Authority on Whiteman's Creek. The structure in the right foreground is a gabion groyne. Behind are other rock-filled, wire-bound groynes together with a low stone-facing along the bank. These groynes are made of heavy gauge rustproof wire baskets. The baskets are hand-filled with rocks. Any number of baskets can be fastened together side by side or end to end. Used for revetments and walls in Europe for many years, gabion groynes were introduced into Ontario in 1957 and first demonstrated by the Grand Authority at Bridgeport.

Groynes are capable of withstanding considerable force of water and ice; they have been effective in protecting stream banks against excessive erosion. Along the bank behind the stonework, cuttings of willow and shrubs have been planted to further stabilize the bank.

Other Authorities have carried out projects of this type which have been successful in protecting bridges, buildings and farmland against stream bank erosion.

FRANKLIN ARBUCKLE, R.C.A., O.S.A.

FORESTRY: *reforestation on the Ganaraska, Scout planting, forestry on abandoned farm land, school planting by hand, machine planting, pulpwood forests, wetland forests, woodlot "clinics", the acquisition of southern hardwood forests, Authority Forests, and Winter Works Programmes*

This land, unfit for agriculture because of poor soil and steep slopes, was cropped and pastured until severe erosion made further agricultural use impossible. Bare slopes contributed to rapid storm run-off and the silting of streams and added nothing to the economy. In 1942 the first land use study in Ontario to recommend a comprehensive plan for the rehabilitation of a watershed was carried out on the Ganaraska and the report on this was printed in 1944. As a result, the Ganaraska Authority was formed in 1946 and this property was the first purchased for rehabilitation under the Authority Forest programme. Of the 20,000 acres recommended for inclusion in the Ganaraska Forest Area, 7,727 acres have now been acquired by the Authority, and over five million trees have been planted.

This is the same property in 1960. Planting was done in 1947 and 1948. The trees were protected from fire and from grazing. Poplars were planted in the gullies and on the worst eroded slopes, and the more valuable pines wherever conditions would allow them to survive. Today the gullies are stabilized, the ugly scars on the slopes are almost healed, run-off is controlled, the land is producing a valuable crop of timber and beauty has been restored to the valley.

An outlet for youthful energies and a training in good citizenship is provided by this Boy Scout tree-planting week-end on the Ganaraska Forest. Thousands of scouts have joined in such activities since the start of the Authority Forest programme and many of those who attended the earlier camps have returned in later years to view with pride and satisfaction their contribution to a better community. Human values as well as timber values are important in the forestry programme of the Authorities.

AUTHORITY FORESTS

Fourteen Conservation Authorities have agreements with the Minister of Lands and Forests for the establishment and management of Authority Forests. Under this agreement the Ontario Government advances to the Authority one-half the cost of land and assumes the entire cost of establishing and managing the forest. These agreements run for fifty years, at the end of which time the Authority may exercise one of three options.

The area included in Authority Forests is 48,000 acres.

A MAJOR aim of the forestry programme of the Authorities is the conversion of land unfit for agriculture to a use in keeping with its capability. The abandoned farm pictured on the Saugeen Watershed is typical of the land being restored to forest production. These lands are purchased by the Authorities with the assistance of the Province and are then placed under a management agreement with the Ontario Department of Lands and Forests. Under this agreement the Department plants the open areas, improves the existing woodland, protects the forest and maintains the roads and fences. At the end of the agreement period the Authority has the option of taking over the forest or relinquishing it to the Province and an accounting and settlement of costs is made according to the option chosen. The Saugeen Valley Conservation Authority has 7,413 acres in Authority Forest and the total land now under forest management by the Ontario Conservation Authorities comprises over 48,000 acres.

EVERY spring since 1952 school children have planted trees on projects sponsored by the Ausable River Conservation Authority. The children learn through actual experience. This first school planting project marked the inauguration of the Authority Forest in the Hay Swamp tract. Senior students from all the schools in the township met for an afternoon of instruction and friendly competition in the practical application of what they had been taught. In their conservation education the Authorities use displays, literature, demonstrations, public meetings and other educational methods, but personal participation is one of the best ways to make a lasting impression.

Much of the poor land requiring reforestation is found in small patches on otherwise good farms. To encourage landowners to plant these areas the Moira Authority supplies the tree-planting machine above at a nominal cost. Many other Authorities supply machine-planting services and hand-planting crews or give subsidies for trees planted by the owner. In addition to the nominal planting cost, the owner purchases the trees and agrees to inspection and proper care after planting. Individual plantations may be small, but in the aggregate they make an important contribution to conservation. One million trees are being planted each year under these Authority assistance schemes.

In the Neebing Valley at the Lakehead the pulpwood market provided by the nearby pulp mills makes intensive management of forest land both possible and desirable. The Authority, in its 1,500-acre forest is demonstrating the possibilities which had hitherto been neglected by private owners. Open areas are being planted, the more valuable conifers are being introduced into low-grade poplar stands, and coniferous swamps like the one here shown are being managed for maximum production.

This section of the Big Creek Region Authority Forest does more than produce timber. The regulation of stream flow through the protection of headwater swamps and spring source areas is a major consideration in purchasing land for Authority Forests. The Hay Swamp on the Ausable, the Middleton Swamp on Big Creek, the Luther Marsh on the Grand, the Burford Swamp on the Otter, the Osprey and Proton Swamps on the Saugeen, the Beverly Swamp on the Spencer and the Ellice and Gads Hill Swamps on the Thames are some of the major source areas in which land has been acquired for Authority forest.

THE place to learn about woodlots is in the woodlot. In a meeting arranged by the Catfish Creek Authority this group in White's Bush carries on a discussion of the merits of this fine piece of woodland under the leadership of Mr. R. J. K. Murphy, Zone Forester, third from the right. Woodlot meetings to discuss the principles of good forest management are of interest to school children, to youth groups and to woodlot owners. They are arranged by the Authorities in co-operation with the Department of Lands and Forests. These meetings stimulate better management of private woodlands on which the local forest industries rely for sawlogs and other wood supplies.

THE Backus Woods, (on the opposite page) one of the finest examples of the southern hardwood forest in Ontario, is now part of the Big Creek Region Authority Forest. This 650-acre tract was part of the Backus family holdings in Walsingham Township which go back to the year 1797. The family had taken good care of the woods and cutting had always been moderate. Now continued good management is assured in the hands of the Authority.

AUTHORITY Forests are already supplying merchantable timber for local industry. This cut in the Ausable Authority Forest has produced 20,000 board feet of cottonwood and elm logs and 100 cords of boltwood to date. The cut will continue for another year. Cutting in Authority Forests is carefully supervised so that the material removed consists of mature trees and the poorer species which interfere with the vigorous young trees of the better species. Proper management of these areas helps to stabilize timber supplies and employment opportunities both in the woods and in the secondary processing plants. An important feature of this type of work is the fact that much of it can be done in the winter when other employment is low. Work in Authority Forests makes an important contribution to the Winter Works Incentive Programme sponsored by the Federal and Provincial Governments.

FRANK S. PANABAKER, A.R.C.A.

WILDLIFE: *nature trails, fishing days for children, reclaiming lakes for wildlife, releasing Hungarian partridges, fish ponds for children, wildlife sanctuaries and birdhouse-building*

MANY Authorities have now included nature trails in their Conservation Areas. These are well-marked paths through attractive woods and fields. Frequent clear and simple signs mark the names and life histories of plants, evidence of the workings of interesting animals, and notes about the soils and rock formations.

More than 100,000 people have used the nature trails organized by the MTRCA and more than 10,000 have walked the trails under the supervision of trained naturalists. Many birds, animals and plants are pointed out on the supervised hikes but the central theme around which the talks are developed is the dependence of all living things—plants and animals—on soil and water.

The effect of conservation teaching is greatly increased when pupils can see, hear and touch some of the things they have talked about in school.

In this photograph Grade 9 students are receiving instruction from a Field Officer of the Conservation Branch of the Department of Commerce and Development, on the identification of native trees and shrubs.

FISHING competitions for children are a very useful way of instilling in the young an interest in nature and conservation. Already five Authorities have organized 27 days of such competitions, and more than 11,000 children have taken part in them. Clubs affiliated with the Federation of Ontario Hunters and Anglers have helped to organize these activities.

The above photograph shows some of the 700 children who enjoyed a trout-fishing competition at Mildmay on the Saugeen. Trout were planted with the co-operation of the Department of Lands and Forests. During this two-day competition, 400 trout were caught.

In the Toronto region so many children wish to participate that permission to fish on these special occasions is a reward for those children who do well in a conservation test in Grade 8 in the public schools of the region. The younger generation is also stimulated by these events to fish in larger bodies of water.

Some Authorities are now managing lakes for fishing by changing the populations to more useful species. For example, the coarse fish were removed with rotenone from Mud Lake on the Thames, and from Heart Lake on the MTRCA. These two lakes now contain largemouth bass and Heart Lake also contains rainbow trout.

THE planting of food and cover plants for wildlife is one method of making sterile land useful. Four Authorities have been particularly active in this work.

McNab Lake, as shown above, in the Bruce Peninsula, was virtually dry and useless until the Sauble Authority raised the water level and introduced wildfowl foods. This Authority has improved the wildlife habitat in this way in five lakes in its watershed.

Along the edge of the reservoir formed by the Morrison Dam on the Ausable, Wild Rice, Buckwheat and Millet have been planted, besides Multiflora Rose and Caragana. Under normal conditions, species such as Wild Rice, Multiflora Rose and Buckwheat, will usually carry on from year to year, either from natural reseeding as in the case of Buckwheat and Wild Rice or because the species is a perennial plant such as Multiflora Rose. Plants such as Millet have had to be reseeded each year.

The MTRCA has published a sixteen-page booklet with illustrations and descriptions of 24 plants suitable for attracting wildlife. The Authority has already printed and distributed 20,500 copies of this book.

The Hungarian Partridge is a choice game bird, found in coveys of 14 to 25 or more, with several coveys per square mile in good territory. The species is well established in the South Nation Watershed in the area around Chesterville, and in some sections of the Niagara Peninsula. Its success in areas which do not have too deep snow appears to be correlated with the amount of rainfall in June. The young are susceptible to wet and soggy clay soils at that time of year. It appears that the species could thrive in many parts of Southern Ontario.

In the lower sections of the Saugeen Valley there are many thousands of acres of long grass, hedgerows and lightly pastured grassland with scattered cultivation. The Saugeen Authority, in conjunction with the Department of Lands and Forests, examined this area in 1958 and chose a suitable site in the Paisley-Chesley area.

The above photograph shows the release of fifty Hungarian Partridges in this area in the spring of 1959. The birds survived the winter of 1959-60 and it is hoped that they will soon become well established in the area.

Some Authorities have constructed excellent ponds for trout fishing. This example is a pond built at Glen Haffy by the MTRCA and is restricted to children only. A similar adjoining pond is open to adults. Yearling trout received from the Department of Lands and Forests were raised in nearby rearing ponds on the property to two-year-olds and then released for fishing. It is estimated that in 1959 these two ponds, totalling about two acres, attracted 7,000 anglers who caught nearly 3,000 speckled trout.

Many old trout ponds have now been improved and are being managed for fishing by Conservation Authorities. A few of the best known are Vittoria Pond in the Big Creek Region, the O'Hara Mill Pond on the Moira, the Varney Pond on the Saugeen and the Harrington, Dorchester and Fullarton Ponds, on the Thames.

In some of the reservoirs built for flood control, there are permanent lakes where fishing is managed by the Authorities in co-operation with the Department of Lands and Forests. These include the lake formed by the Fanshawe Dam on the Upper Thames and that formed by the Morrison Dam on the Ausable. The former was stocked with rainbow trout and the latter with speckled trout.

Swamps in Conservation Areas can serve as wildlife sanctuaries while at the same time storing water for seepage underground and keep streams running in summer. The North Grey Region was the first in which such a sanctuary was acquired. The Bognor Swamp, shown above, which was fenced and closed to firearms, extends over 75 acres. This is an excellent breeding and feeding ground for ducks, herons, bitterns and many other shore and land birds. Duck foods have been planted in the Area. This means that the supply of ducks for hunters elsewhere is increased. Those of the public who prefer to observe wildlife without firearms also benefit from the sanctuary. A study programme has been commenced by the local district Biologist of the Ontario Department of Lands and Forests to determine the effectiveness of this Area.

For the purpose of producing a supply of suitable planting stock the MTRCA and the Upper Thames both have established nurseries, which include the production of the following species for food and cover for wildlife: Viburnum, Honeysuckle, Russian Olive, Elderberry, Sumac, Lilac, Buttonbush, Witch Hazel, Black Locust, Caragana and hardy species of Multiflora Rose.

THE making of a feeding tray or birdhouse is often the first practical carpentry project which a boy undertakes. With the single limitation that the size of the entrance hole usually decides the kind of bird to be attracted, almost any design will attract some bird, and there is therefore a vast scope for ingenuity, imagination and skill in design and construction.

The Conservation Authorities have sponsored several competitions for the making of birdhouses, and in this way have given many children their first practical introduction to conservation.

Many of the Authorities have also constructed birdhouses in large numbers to help those bird species for which the natural nesting places are reduced. Suitable nesting holes for Wood Ducks—the most spectacular of all our wild ducks—are now in short supply in Southern Ontario. Nesting boxes for these species have therefore been put up in large numbers by three Authorities in their Conservation Areas.

Another species of bird which has shown a drastic decline in the last twenty years is the very attractive Bluebird, which was a common bird when there was a great variety of old fields, stumps and fences; the response to the installation of nesting boxes for Bluebirds was spectacular. More than fifty per cent of all those put up by the Authorities were occupied in 1960.

ADRIAN DINGLE

CONSERVATION AREAS AND PARKS: *acquisition of beaches, preservation of scenic areas, community ponds, reforestation demonstrations, multiple-use parks, parks for family picnics, winter recreation, wilderness areas, Niagara Escarpment Parks, small lakes for swimming, historical buildings, acquisition of flood plains for parks, and parks on reservoir lakes*

THE acquisition of shoreline properties for public use as Conservation Areas has been undertaken by several Authorities. The growing population of the Province and improved transportation facilities have put a heavy demand on the limited areas of public beaches on the Great Lakes in Southern Ontario. Twenty-two hundred feet of beach at the mouth of Indian Brook, consisting of 24 acres on Georgian Bay near the Village of Thornbury, shown above, were acquired by the North Grey Region Authority. It is proposed to maintain this area in its natural state so that people may enjoy the great variety of flora which grow there. Acquisition of Conservation Areas on the Great Lakes has also been made by the Sauble, Otter and Niagara Peninsula Authorities.

The Niagara Authority property known as Long Beach is very attractive. The property consists of 142 acres bordering on Lake Erie, with 2,220 feet of beautiful sandy beach. A section north of this is being developed for overnight camping and approximately 60 acres will be reforested.

In the selection of Conservation Areas, the choice of sites has been made to include some of the most scenic parts of Southern Ontario. For example, at Elora on the Grand Authority, where the main river has cut a deep gorge through the Silurian rocks, the most interesting section has been preserved for public enjoyment. The whole property includes 307 acres, of which approximately 82 acres are occupied by the gorge and the fringe of forest on each side, 225 acres have been developed for family picnicking and overnight camping, and a large area is given over to demonstrations of woodlot management, reforestation and soil conservation practices. In 1960, 65,000 people enjoyed the rugged beauty and picnicking facilities of this attractive area.

Similarly, an area known as Hi-Pot-Lo Park at Rockwood, with its surrounding outcroppings of limestone and extensive ponds fed by the Eramosa River, has been acquired by the Grand Valley Authority. This area is 195 acres in size, of which 35 acres are woodland; the remainder will be developed for picnicking, camping, fishing and swimming.

CONSERVATION AREAS

Conservation Areas include all land owned by Authorities—except Authority Forests—such as surplus land bordering large reservoirs, land surrounding a community pond or mill dam, woodland, flood plain land, wooded valley slopes, wetlands and land purchased for the demonstration of conservation practices. Where such lands or parts thereof are suitable, they may be or have been developed as parks. The number of Conservation Areas, including the Grand Commission, is 88, the total area is 25,000 acres and the number of parks is 46. Attendance at the parks in 1960 was 1,800,000.

COMMUNITY ponds are a major development as part of several Conservation Areas. In many cases these are adjacent to towns or small hamlets, similar to the one at Harrington on the Thames, pictured above. For many years the old grist mill, seen in the lower right of the photograph, served the surrounding farming community. During the floods of 1949 the dam was washed out and the empty pond became an eyesore on the landscape. Soon after the dam went out there were many instances of wells in the immediate area going dry. In 1953 the Upper Thames Authority rebuilt the dam, purchased land surrounding the pond and developed the area for picnicking and fishing.

Nineteen community ponds have been built by Authorities which, besides conserving water, providing fishing, swimming, skating and fire protection, add beauty to the countryside.

REFORESTATION is an important educational feature of Conservation Areas wherever this can be carried out. When the Boyd Area was under consideration for purchase by the former Humber Authority—now included in the MTRCA—a valuable asset was the 80 acres of well-cared-for woodland and a 35-acre plantation of red pine, now 30 years of age, shown on the opposite page. These areas are now used as demonstrations for the 300,000 people who annually visit this property, and indicate to them the best procedures in the proper care of woodlots and plantations.

In the Credit River Valley, which has been renowned for many years for the beauty of its wooded hills and tributary streams, this Conservation Area has been developed at Terra Cotta. The whole Area comprises 300 acres, with 250 acres of natural woodland through which winds a tributary stream of the Credit River. This stream, together with many springs which arise on the property, feeds several large ponds which are used for fishing, breeding places for wildfowl, and one, as shown above, is used by many thousands of people for swimming. The Area is also equipped for family and group picnics, and farther back, at the end of a winding woodland road, for those by whom seclusion is appreciated, a part of the property is laid out for overnight camping. An additional attraction on this property is a carefully planned nature trail which was laid out by Professor A. F. Coventry.

The woodland sections of most Conservation Areas are of the mixed hardwood type so familiar to residents of Southern Ontario. In a few cases, however, there are stands of good-sized pine. Here shown on the opposite page is a stand of red pine which is near the southern limit of this species, in a Conservation Area owned by the Holland Valley Authority. Close by are areas for family picnics and other forms of recreation. The Area also displays the famous Holland Landing Anchor, which was brought by teams of horses from Lake Ontario in the winter of 1814-15 for the use of a naval vessel on Lake Huron.

Conservation Areas are used throughout the whole year. In spring those who are prepared to walk—the roads not being open for vehicular traffic—can observe the miracle of awakening spring—the first song-birds, wild flowers (not to be picked) and the more elusive bloom of forest trees. Summer is the busiest time; but come the fall, with the changing colours of maples interspersed with evergreens, the yearning for bonfires and wiener roasts arrives. Later, when the lake is frozen over, young and old can enjoy the healthful Canadian sports of skating, hockey, and in some Areas, skiing on the wooded slopes.

Skating, skiing, and tobogganing are enjoyed at Fanshawe Lake as shown above and fulfil another function in meeting the health needs of our people. Natural facilities such as these, so close to urban centres, encourage both children and parents to be participants in sports and healthful recreation. Physical fitness of our people is another important by-product of a conservation programme. Most of the community ponds and lakes of the Conservation Authorities provide opportunities for winter sports.

In all Conservation Areas it is planned, if possible, to acquire and retain some natural woodland and land that should be reforested. Such areas are managed for the demonstration of good forestry practices, and because of the large number of people who visit these areas they are important to conservation education programmes. Where small swamps occur, and groups of rare trees and wild flowers are found, they are left in their wilderness state. The access to such areas, as shown above at the Byng Island Conservation Area on the Grand River near Dunnville, is along a woodland trail reserved for those who prefer to enjoy their leisure by walking through the woods.

The Byng Island Area contains in all 144 acres, part of which is an island and all of which borders on the wide reaches of the Grand River near its mouth. Besides the usual park facilities, this Area has been known for many years for its fishing and the great number of wildfowl that abound in the marshes nearby.

THE Niagara Escarpment, which extends from Niagara Falls through a large part of Southern Ontario to Tobermory in the Bruce Peninsula, has for many years been considered a most suitable area for a series of semi-wilderness parks. Little headway has been made in acquiring any large part of the escarpment for this purpose. However, two Authorities, namely the Twelve-Mile Creek and the Niagara Peninsula, have made a start on this worthwhile project and each has purchased a small area as an Authority scheme.

The above picture shows a section of the escarpment in the Twelve-Mile Creek Watershed known as Mount Nemo, 65 acres of which the Authority has acquired as the first unit in a proposed larger scheme.

Many miles away near Niagara Falls, the Niagara Peninsula Authority has purchased a property on the escarpment which has been known for many years as Ball's Falls. Here the Twenty-Mile Creek cascades over two shelves of rock, the height of the higher one being 80 feet. The river then continues on through a gorge in the escarpment. This area is 100 acres in size, with 35 acres of woodland, 45 acres of open field suitable for the demonstration of soil and water conservation practices and an old mill which, it is said, ground flour for the troops during the war of 1812.

This view of Heart Lake, owned by the MTRCA, demonstrates vividly the tremendous pressure to which such swimming areas are put by people from the adjoining municipalities to escape from the heat of summer. On some warm Sundays the number visiting this Area exceeds 7,000. Such pressure for use can only be corrected by enlarging the Area or acquiring similar sites in other parts of the watershed. The Heart Lake Conservation Area has been enlarged three times, but still is not large enough for the crowds who go there to swim, fish, picnic, camp and enjoy the nature trail which has been laid out for those who choose this quiet form of recreation.

One of the important requisites for an Area which is used by so many people is adequate facilities such as changing houses, lavatories and refreshment booth. Appreciating the need of such facilities at this popular Area, the Authority has commenced to erect a multiple-use building at a cost of $90,000, the financing of which is being shared by the Ontario Government and the Winter Works Programme.

The acquisition and preservation of historical buildings, tools and utensils used by the pioneers, especially where these are related to early agriculture, has been a project of five Authorities namely: Moira, Thames, Grand and Big Creek Region. The O'Hara Mill, on a small tributary of the Moira River near Madoc, was acquired in 1954. This old muley sawmill, shown on the opposite page, was built in 1846 or 1847 and was operated continuously until 1908. The building was repaired, the dam and mill pond which supplies the water-power were rebuilt, and the machinery put back in working order. The property, which includes 35 acres, has some attractive woodland and a delightful picnic area has been developed on the shores of the mill pond.

The log house and barn shown above are in the Pioneer Village near Fanshawe Lake, developed by the Upper Thames Authority. Besides these two buildings, the village includes a blacksmith's shop, country store, community hall, and carriage shop. The log cabin is completely furnished in the style of about 1860. The barn contains livestock and on the grounds are other items used by the pioneers of this period.

The Pioneer Village developed by the MTRCA on the 85-acre Black Creek Conservation Area, shown above, has as its nucleus a group of seven log buildings on their original site, built between 1809 and 1832. Old buildings erected prior to 1867 are being moved to the Area and now include a school, church, blacksmith's shop, artisan's shop, squire's house, grain barn, cider mill, and general store. These buildings will be completely furnished and vividly depict the conditions under which the settlers of this area lived. A feature of this development is the Pioneer Festival held each fall, which in 1960 was attended by 10,000 people. The Area is also visited by many groups of school children and in the same year 4,000, representing 160 classrooms, visited the village.

On the Grand, the Authority is co-operating with the Ontario Pioneer Community Foundation in the establishing of a pioneer village near Doon. A spacious museum has been built and several buildings depicting the life of settlers in pioneer times are being moved to the property.

The Big Creek Region Authority acquired the old Backus Mill, built in 1798, when it purchased the Backus Forest of 650 acres, and is developing it as a pioneer museum.

Since Hurricane Hazel in 1954, the acquisition of flood plain land has been considered an important means of reducing flood damage on many of the rivers in Southern Ontario. For many years conservationists warned against the ever-increasing encroachments on the natural flood plain lands of rivers, caused by man-made structures, unwise dumping and the development of subdivisions. These flood plains belong to the river by ancient right and sooner or later—and more often sooner—it exercises this right, and great destruction and suffering may be the result. The best use for flood plain lands is recreation, developed so that all permanent structures are above the high-water level.

One of the best examples of foolish use of flood plain land was a part of the village of Long Branch at the mouth of the Etobicoke River. This area has a long history of flooding, as shown in the above picture, but, in spite of this, it was crowded with homes. When Hurricane Hazel struck in 1954, 13 houses were swept into Lake Ontario, 43 were totally destroyed and 7 lives were lost. Then the remaining houses were removed, the flood plain was filled in, graded, and developed into a beautiful park, now named after Reeve Marie Curtis.

When large dams and reservoirs are built for flood control, it is sometimes possible to retain a permanent pond in the reservoir after the threat of floods has passed. Also, in the purchasing of land for flood reservoirs, there is always a considerable amount of surplus land which can be used for recreation. Here on the shores of the permanent lake behind the Fanshawe Dam, built to protect the City of London from floods, this spacious park has been developed. Thousands of people picnic here daily during the summer. Boating, fishing, and swimming are popular in this park. An added feature is the many sail-boats which can be seen on the lake, owned by the members of the Fanshawe Yacht Club. On the far side of the lake are summer cottages, overnight camping sites and a trailer camp. Close by is a golf course developed jointly by the Upper Thames Authority and the London Public Utilities Commission. On this Conservation Area there are also an arboretum, blocks of reforestation, ponds for raising fish, and a pioneer village. The greatest attraction, however, to many, is a tour through the $5,000,000 Fanshawe Dam.

Rock glen on the Ausable River at Arkona (on the opposite page) is a beauty spot secured for public use by the Ausable Authority. Although this Conservation Area is only 18 acres in extent, it is an extremely popular family picnic spot and has been used for many years by the Boy Scouts for group camping. Much of the Area is wooded. The gorge on the main river, noted for its rich fossil deposits, the charming falls on the small permanent tributary stream and the rugged glen below the falls are constant sources of interest to visitors.

iver Valley Development
is the wise use of all the
natural resources of a river
valley for all the people living
in the valley, for all time.

—Samuel Woodstock